standard deviation (SD) for MPI were calculated for each owl. During the next 8 weeks, each owl was fed one day per week (randomly selected) at a time equal to one SD prior to the mean MPI (i.e., prior to expected egestion time). We expected that when presented with a meal (mice) at this time, owls would a) not eat immediately, but initiate egestion and eat within 15–30 minutes, b) eat the new meal on top of the undigested remains of the previous meal still in the stomach, or c) not eat within 30 minutes and thus miss the opportunity to ingest a new meal. With one exception when we observed a, we otherwise always observed b, i.e., they ate on top of a previous meal. Pellets from these "double" meals were less than twice as heavy as pellets from a single meal, so digestion was apparently slightly better after two meals. Thus, not only do owls not miss the chance to eat a second meal because a first meal is not yet completely digested, their digestion may even be slightly more efficient when the second meal is eaten.

MOVEMENTS AND HABITAT USE BY COMMON RAVENS FROM ROOST SITES IN SOUTHWESTERN IDAHO

ENGEL, K.A. *EBASCO Environmental, 10900 NE 8th Street, Bellevue, WA 98004.* L.S. YOUNG. *Washington Department of Natural Resources, Forest Land Management Division, P.O. Box 47016, Olympia, WA 98504-7016*

Increasing conflicts between ravens and human interests in the western United States necessitate a better understanding of raven ecology, especially with respect to human land alterations. We observed daily movements and habitat use of 31 radio-marked common ravens (*Corvus corax*) from four communal roosts in the Snake River Birds of Prey Area in southwestern Idaho from April 1985 through February 1987, and recorded their activities relative to various human-related food sources (e.g., croplands, cattle feedlots, and refuse landfills). Daily maximum distances traveled from roost sites were similar ($P = 0.63$) among seasons, but not ($P < 0.01$) among roosts. Ravens from roosts located within 1 km of a concentrated human-related food source traveled shorter (all $P < 0.03$) distances from roosts than ravens that were not. Ravens spent an average of 54% of the day in agricultural land, followed by shrub (23%), grass (13%), and riparian habitats (6%). Raven use of various habitats was similar (all $P > 0.27$) among seasons. Likewise, raven use of agricultural, riparian, and shrub habitats was similar ($P > 0.06$) among roosts, although use of grass habitats was lower ($P < 0.01$) at one roost. Raven roost locations, daily movements, and habitat use were associated with human-related food sources. Raven populations may thus be managed through manipulation of raven food supplies, particularly those related to human activities.

OCCURRENCE AND NESTING HABITAT OF NORTHERN SPOTTED OWLS IN MANAGED YOUNG-GROWTH FORESTS IN NORTHWESTERN CALIFORNIA

FOLLIARD, L.B. *College of Forestry, Wildlife and Range Sciences, University of Idaho, Moscow, ID 83843.* L.V. DILLER. *Simpson Timber Company, P.O. Box 1169, Arcata, CA 95521.* K.P. REESE. *College of Forestry, Wildlife and Range Sciences, University of Idaho, Moscow, ID 83843*

From 1989 through 1992, approximately 120 000 ha of managed, young-growth forests were surveyed for northern spotted owls (*Strix occidentalis caurina*) in coastal northern California. To date, 169 owl sites have been identified and over 500 birds banded (including 197 juveniles). The relative density of owl sites was greatly influenced by the amount of acreage of forest >45 years old. The region with the highest density (about 0.46 owl sites/km^2) had 37% of the landscape in this older age class. Habitat analysis of 60 nesting pairs revealed that owls nested in stands that varied from pure conifer to those dominated by hardwoods, with no apparent selection for a particular cover type. The median nest stand age was 59 years, with 83% of pairs nesting in stands 35–80 years old. On average, conifer nest stands were dominated by trees 53–90 cm dbh in size. Although the density was low, there was a higher density of large (>90 cm dbh) conifers ($P = 0.010$) in nest stands in comparison with randomly selected stands. In general, hardwood nest stands had smaller trees than conifer stands. In comparison with old-growth forest structure, the most distinctive difference was the low density of trees >90 cm dbh in these managed stands. Favorable conditions in the redwood (*Sequoia sempervirens*)/Douglas-fir (*Pseudotsuga menziesii*) coastal region such as rapid tree growth rates and an abundant prey base, make these second-growth forests suitable spotted owl habitat at an early age. Development of spotted owl habitat in this region can occur at an accelerated rate following timber harvest in comparison with other regions of the species' range.

ANALYSIS OF PESTICIDE EXPOSURE RISK TO RED-TAILED HAWKS WINTERING IN ALMOND ORCHARDS IN CALIFORNIA

FRY, D.M., B.W. Wilson, N.D. Ottum, J.T. Yamamoto and R.W. Stein. *Department of Avian Sciences, University of California, Davis, CA 95616.* J.N. SEIBER, M.M. MCCHESNEY AND E. RICHARDSON. *Department of Environmental Toxicology, University of California, Davis, CA 95616*

Red-tailed Hawks (*Buteo jamaicensis*) become exposed to organophosphate (OP) pesticides while wintering in the central valley of California. Previous work on birds trapped by M. Hooper, P. Dietrich, and E. Littrell showed exposure associated with OP dormant spraying in almond orchards. This study extends that work by examining winter home ranges of hawks, pesticide use within home ranges, and documentation of exposure through analysis of foot washes, feather samples, and feces. The exposure risk from